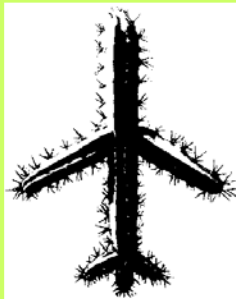


Noise Mitigation Monitoring Report



AVCO

Tempe Aviation Commission

April 2005

Best performing large airline: United!

Hot Button Issues:



The FAA's Suspension of the "Side-step", landing procedure, see p. 3



Difference between Tempe's "4 DME corridor" and Phoenix's "4 DME Gate", see p. 6



TAVCO's recommendation to form an aviation discussion group with Phoenix Mayor/Council, see p. 10

1. Introduction.....	Page 3
2. Aircraft Operations.....	Page 5
3. Departure Compliance.....	Page 6
4. East/West Equalization of Departures.....	Page 8
5. Complaints.....	Page 9
6. TAVCO Recommendations.....	Page 10

1. Introduction



This report is assembled for the Tempe Aviation Commission (TAVCO) to monitor the monthly compliance of operations at Phoenix Sky Harbor International Airport with certain noise mitigation flight procedures over the City of Tempe. TAVCO consists of 13 Tempe residents appointed by the Tempe Mayor with approval of the City Council to assist and advise on aviation noise and other issues relating to the Phoenix Sky Harbor International Airport. The City of Tempe is located directly east of the Phoenix Sky Harbor International Airport in Phoenix, which has 3 parallel runways, Runway 8/26, Runway 7L/25R and Runway 7R/25L.



The IGA on Noise Mitigation Flight Procedures

In 1994 the City of Phoenix and the City of Tempe agreed to continue noise mitigation flight procedures already in use over Tempe:

- Have jets and large aircraft depart to the east over the Salt River:
- Equalize the noise burden from jets and large aircraft departures between east and west during daytime and nighttime hours on an annual basis.

The agreement also introduced a new procedure for mitigation noise from arriving aircraft:

- Make use of a side-step maneuver to land jets and large aircraft on the new third runway (25L) from the east. The City of Tempe had prior to the agreement challenged the plans for the construction of a third runway because of inadequate assessment of the environmental impacts, and agreed to settle the legal challenge in exchange for an Intergovernmental Agreement (IGA) on noise mitigation flight procedures with the City of Phoenix¹.

The Phoenix Sky Harbor International Airport part 150 Noise Compatibility Study

The City of Phoenix also agreed to submit an update to the F.A.R. Part 150 Noise Compatibility Plan and Program for the Phoenix Sky Harbor International Airport to the FAA no later than start of operation on the new 3rd runway. The completed update of September 2000 was sent to the FAA for approval after being approved by the Phoenix Advisory Aviation Board and the Phoenix City Council. Prior to updating the elements of the plan, the FAA had reviewed new noise exposure contour map forecasts that the City of Phoenix had completed in March of 2000. The FAA announced that it had received the September 2000 study in March 2001, and approved it in October of 2001 with effective date September 7, 2001. Inaugural flights from the 3rd runway started October 5, 2000, after which the airport closed the runway temporarily to complete installation of runway lights. A few weeks later the 3rd runway was in regular use. The September 2000 update included the following recommendations on noise mitigation flight procedures to the east:

- Continue the runway use program calling for the equalization of departure operations to the east and west both daytime and nighttime.
- Continue the 4 DME departure route procedure which overflies the Salt River by all jets and large propeller aircraft departing Runways 8 and 7L
- Implement the 4 DME departure route procedure for all jets and large propeller aircraft departing Runway 7R.
- Establish a side-step approach to Runway 25L for noise abatement.

The study also recommended directing (smaller) propeller aircraft departing Runway 7R to turn to a 120 degree heading upon reaching the end of the runway to concentrate traffic over commercial/industrial corridor of Interstate 10 southeast of the airport.

¹ Maricopa Recorder: 9/28/1994, reference number 94-0706551

The 4-DME procedure

The 1993 Environmental Impact Statement (EIS)

According to the 1993 EIS, which among other planned improvements included the construction of a third runway, departures to the east from the new runway would follow the so-called "One-DME" Standard Instrument Departure procedure (SID) similar to the SID already in use by aircraft departing to the east from the airport².



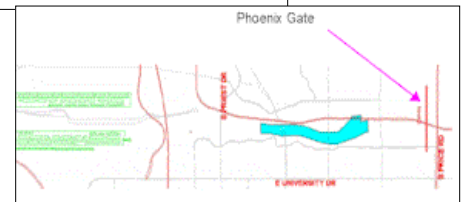
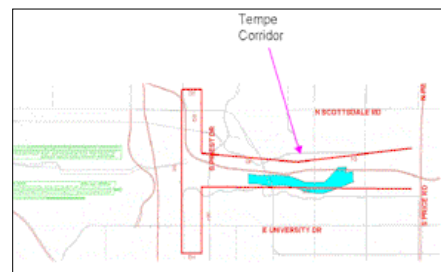
North Runway 8L (Now 8): "Fly heading 085° to intercept PHX-075, across PXR R-350 at or below 3,000'. At 4 DME east of PHX VORTAC, turn right/left"
Center Runway 8R (Now 7L): "Fly direct PHX VORTAC, cross PHR at or below 3,000'. Proceed via PHX R-075 to 4 DME east, turn right/left" (FAA SW-1 of August 10, 2000)

The 1994 Record of Decision

The continued use of the "One-DME procedure" was also stated in the Record of Decision (ROD) for the final EIS, where the FAA approved the 1989 master plan update that included the plans for a third runway. When Phoenix and Tempe signed the Intergovernmental Agreement (IGA) on noise mitigation flight procedures over Tempe, the FAA reaffirmed its commitment to uphold these procedures³. The "One-DME procedure" became the "4-DME procedure" when a navigational aid (VORTAC) was moved closer to the airport.

Measure for Departure Procedure Compliance

Based on the 4-DME Standard Instrument Departure procedure (SID) TAVCO proposed a corridor over the river bed of the Salt River to measure how jet aircraft and large turboprop aircraft⁴ complied with the "4-DME procedure" using the Noise and Flight Track Monitoring System that Phoenix had agreed to install. This proposal was adopted by the Tempe City Council, but was rejected by the City of Phoenix. The airport use a vertical line to measure compliance of jet departures called the "4-DME Gate" or the "Exit Window Only Gate", which is a 5,500 feet long imaginary line running north south at 4-DME or approximately at Price Road. Turns by carrier jets north or south away from the Salt riverbed before reaching this line, or failures to stay inside the north or south end of this line are registered and in a compiled format submitted to the airlines in a "Notice of Deviation" letter from the airport administration. Deviations influenced by local weather conditions are excluded from the notification procedure.



² Source: Final Environmental Impact Statement Phoenix Sky Harbor International Airport Master Plan Update Improvements, November 1993, Section 5.

³ The FAA made an amendment dated September 13, 1994 to the original ROD of January 18, 2004, where it reaffirmed its commitment to noise mitigation measures described on page 15 in the original ROD.

⁴ Aircraft certified and operated according to Title 14 FAR Part 121 or 135 with gross weight exceeding 12,500 pounds

This report compares departure compliance using the Tempe Corridor and the Phoenix "4-DME Gate" or "Exit Window Only Gate", and for the Tempe Corridor measure includes large turboprop aircraft because they are part of the 1994 agreement. Since the implementation of the "4-DME Gate" deviation standard for large carriers in 1997, the main issue of concern has been how well these aircraft on departure from Phoenix Sky Harbor International Airport to the east keep to the Salt riverbed and avoid flying over populated areas in Tempe.

The "Side Step" procedure

This is a noise mitigating procedure for jets and large turboprop aircraft that approach Phoenix Sky Harbor International Airport from the east to land on the third runway, Runway 25L.



Aircraft are directed to approach the center runway, Runway 25R, until they are 3 NM from the runway end or abeam Sun Devil Stadium at Mill Avenue in Tempe. At this point the pilot can be requested by the Phoenix air traffic controllers to change the approach course to land on Runway 25L. When the pilot directs the aircraft from a stabilized approach to the Runway 25R towards the left and line up for landing on Runway 25L, the pilot performs a "side step procedure". This procedure is designed to keep large aircraft approaches over the river bed as long as possible before they close in towards neighborhoods in downtown Tempe south of the riverbed.

On March 27, 2002 the FAA suspended implementation of a charted "side step" procedure because of flight safety concerns. Presently the FAA is clearing jets and large turboprop aircraft for straight-in approaches to Runway 25L from the east. No measure has been set up in the airport Noise and Flight Track Monitoring System to monitor the use of this procedure, and in its present format this report does not include any data on the utilization of the "side step" procedure.

The Departure Split (Equalization)

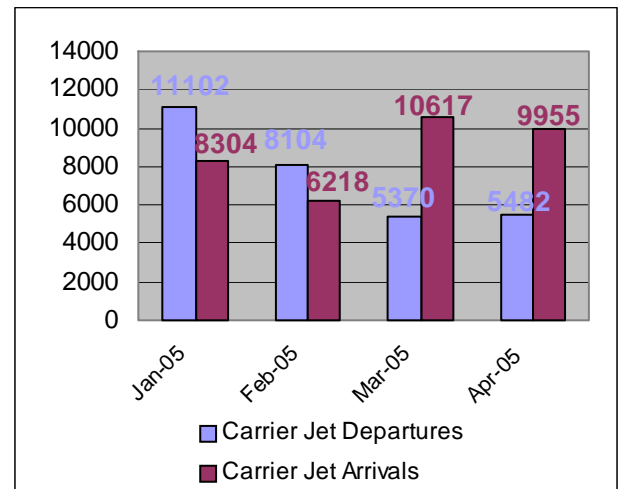
This procedure attempts to disperse evenly on an annual basis the noise impact of eastbound and westbound jet and large turboprop aircraft departures between Tempe and Phoenix during day and nighttime hours.

2. Aircraft Operations



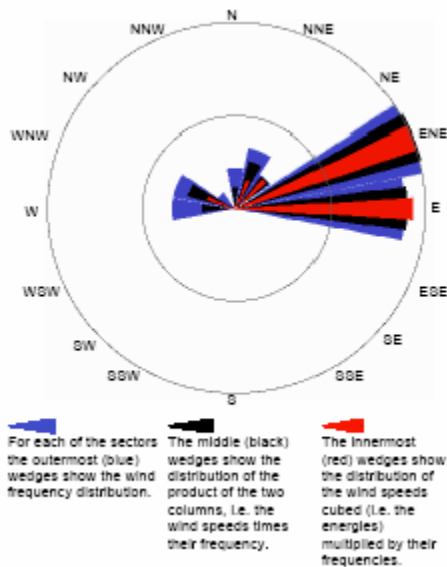
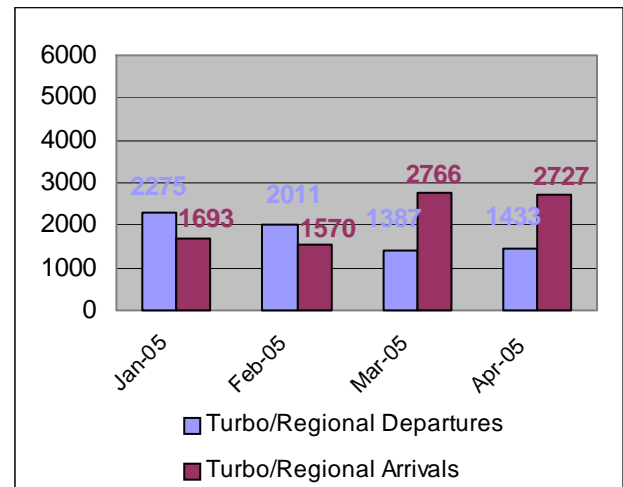
Carrier Aircraft

The number of large carrier jets departing to the east during the month of April 2005 increased 2.1% compared to March 2005. Carrier arrival operations from the east towards the west decreased 6.2% compared to operations in March 2005.



Regional Jets & Large Turboprop Aircraft

Regional jets and large turboprop departures towards the east increased 3.3% in April 2005 compared to March 2005. The number of regional jets and large turboprop aircraft arriving from the east decreased by 1.4% compared to the previous month.



Of all jet and large turboprop departures to the east, 260 departures or 3.6% occurred between 0:00 and 6:00 a.m. 127 or close to 1.0% of all jet and large turboprop arrivals from the east occurred between these early hours.

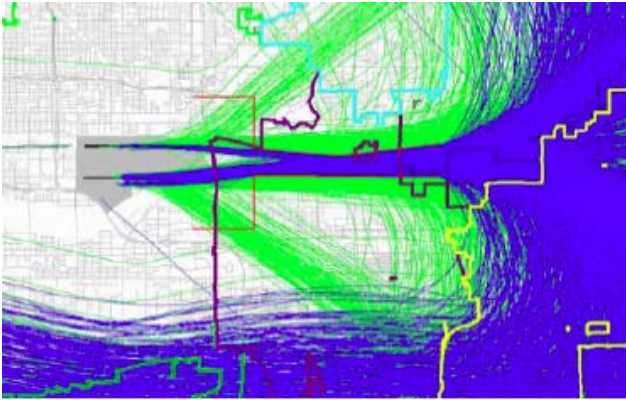
Moderate winds mainly from the east northeast and east with speeds up to fresh breeze, 16.7 knots, during one evening hour at 9:00 p.m.

3. Departure Compliance

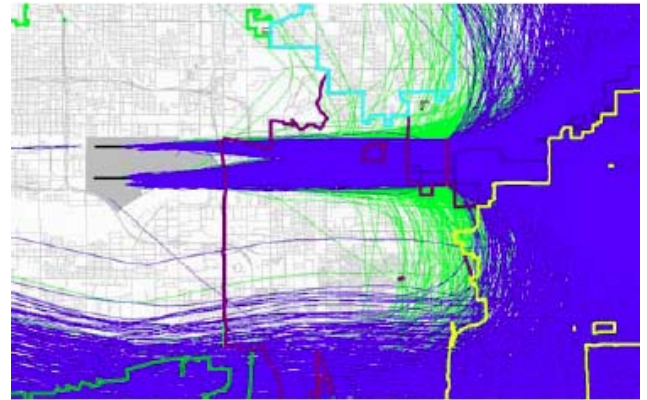


Compliance Rates

Including the large turboprop aircraft, which routinely are routed on approximate departure angles of 120° towards the southeast and 60° towards the northeast, **60.1%** of all jet and larger turboprop aircraft departures to the east complied with the Tempe Corridor during the month of April 2005. 96.2% of the jets complied with the Phoenix 4 DME gate. Departures by large turboprop aircraft are not included in the Phoenix gate compliance rate.



Flight tracks inside the Tempe Corridor are depicted in blue.



Flight tracks inside the Phoenix Gate are depicted in blue.

Carrier	ICAO Code	%	Carrier	ICAO Code	%	Carrier	ICAO Code	%
American Airlines	AAL	47.3	D&D Aviation	DDA	27.8	Flight Options	OPT	30.0
Air Canada	ACA	55.6	US Department of Justice	DOJ	100.0	Pace Airlines	PCE	60.0
Ameristar Jet Charter	AJI	0.0	Executive Jet Aviation	EJA	29.0	Pacific Jet	PCJ	0.0
American Trans Air	AMT	36.4	Executive Jet Management	EJM	40.0	Sun Country	SCX	85.0
Aero Mexico	AMX	0.0	Delta AirElite	ELJ	100.0	Spirit Aviation	SJJ	0.0
Alaska Airlines	ASA	66.1	Federal Express	FDX	47.1	Sky West	SKW	59.0
Mesa Airlines	ASH	58.7	Frontier Airlines	FFT	49.3	Southwest Airlines	SWA	63.1
America West	AWE	68.5	Citation Chares	FIV	50.0	Swift Air	SWQ	27.8
British Airways	BAW	0.0	Hawaiian Airlines	HAL	27.8	TAG Aviation	TAG	0.0
Continental Express	BTA	63.6	JetBlue	JBU	63.2	Sunset Aviation	TWY	100.0
Atlantic Southeast	CAA	33.3	Kitty Hawk Air Cargo	KHA	0.0	United Airlines	UAL	80.8
Capital Cargo	CCI	100.0	Flexjet	LXJ	60.0	United Parcel Service	UPS	55.3
Champion Air	CCP	75.0	Midwest Express	MEP	68.0	US Airways	USA	20.7
Continental	COA	60.5	Martinair Holland	MPH	0.0	US Check Airlines	USC	23.3
Custom Air Transport	CTT	38.5	GA	N	38.1	Corporate Flight	VHT	100.0
Delta Airlines	DAL	25.9	Northwest Airlines	NWA	51.0	Westjet	WJA	50.0

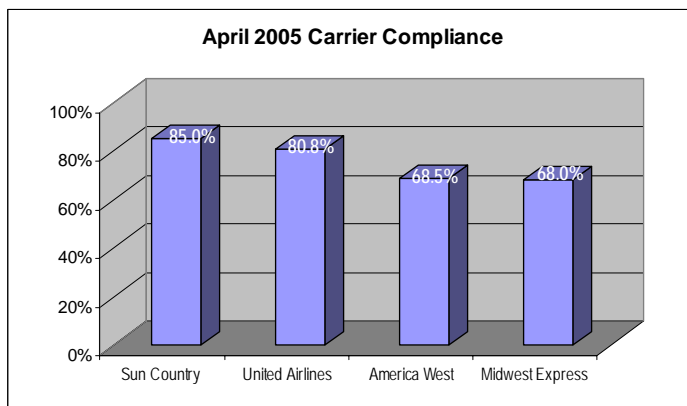
Departures excluded⁵

4/2/2005 11:54 a.m.-12:21 p.m.	4/16/2005 6:07-7:24 a.m.
4/3/2005 9:33-11:47 a.m.	4/17/2005 7:11-7:29 a.m.
4/6/2005 7:01-7:52 p.m.	4/18/2005 6:09-9:58 a.m.
4/11/2005 6:02-6:55 a.m.	4/19/2005 6:10-7:19 a.m.
4/15/2005 7:01-7:43 a.m.	4/27/2005 7:08-7:34 a.m.

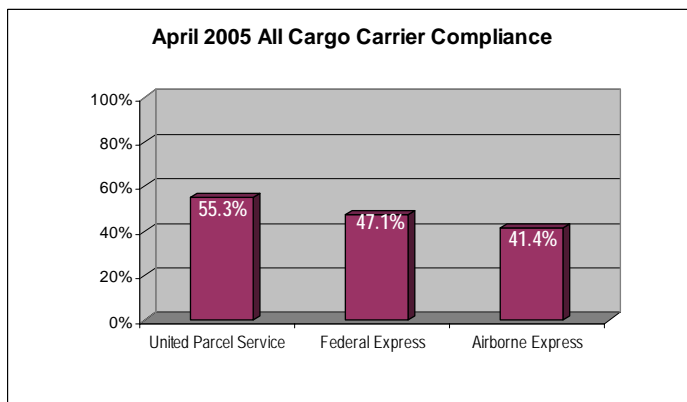
⁵ Based on City of Phoenix evaluations of weather influencing navigation east to 4DME.

Top Airlines

Among the carriers with over 10 departures to the east during the month of April 2005, 4 had 68% or more of their aircraft stay within the Tempe Corridor. This is a bit lower than last month when the top 4 reach 70% and above .

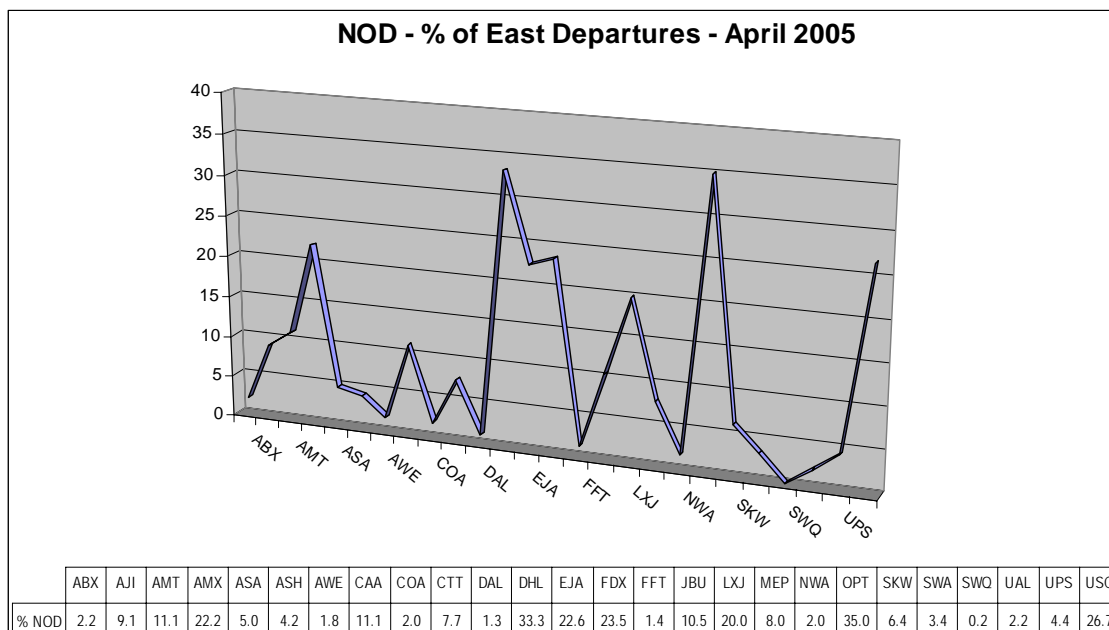


The compliance rates for the top cargo carriers with more than 10 departures to the east during the month of April 2005 were not as good as last month when the top 3 all cargo carriers had between 50% and 67% the Tempe Corridor.



Notice of Deviation

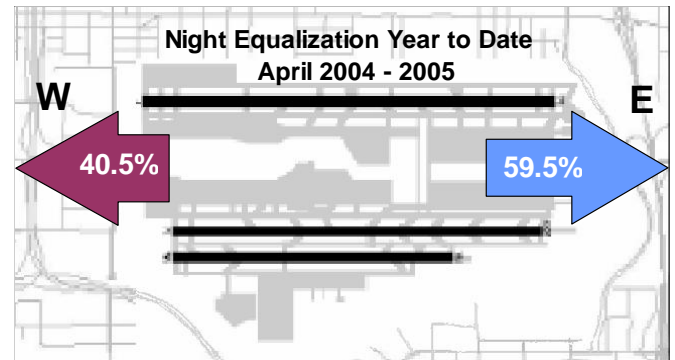
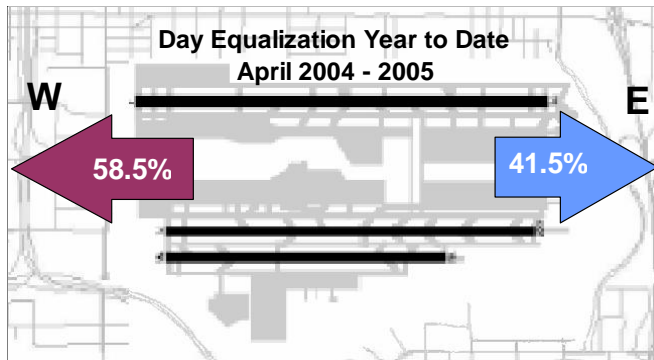
The City of Phoenix issues Notice of Deviation (NOD) to airlines and operators of smaller jet aircraft if any of their jets fails to comply with the 4DME Gate. Among the operators of jets with at least 5 departures to the east during the month of April 2005 US Flight Options and DHL received the most notices relative to the number of east departures registered for each operator.



3. East/West Departure Split



The split in jet and large commuter aircraft departures to the east and west of the Phoenix Sky Harbor International Airport is generally not as favorable for Tempe during the nighttime hours compared to daytime hours. Counting all departures by jet and the large turboprop aircraft, as of April 2005 59.5% of all nighttime and 41.5% of all daytime departures have gone towards the east.

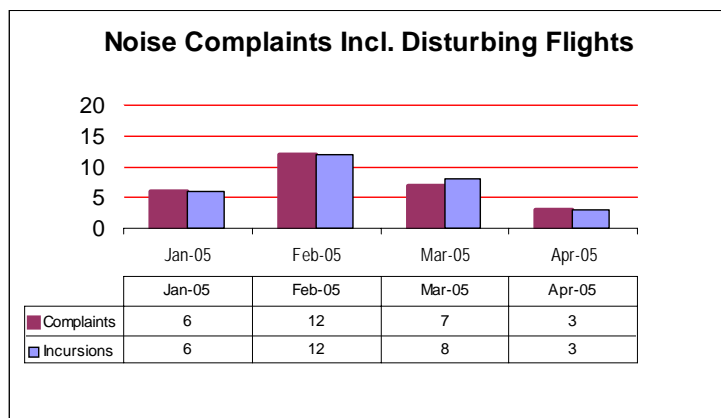


Day and nighttime departures are generated by a query covering day + evening hours and nighttime hours. Day = 7: 00 a.m. to 9:59:59 p.m. local time and Night = 9:59:59 p.m. to 7:00 a.m.

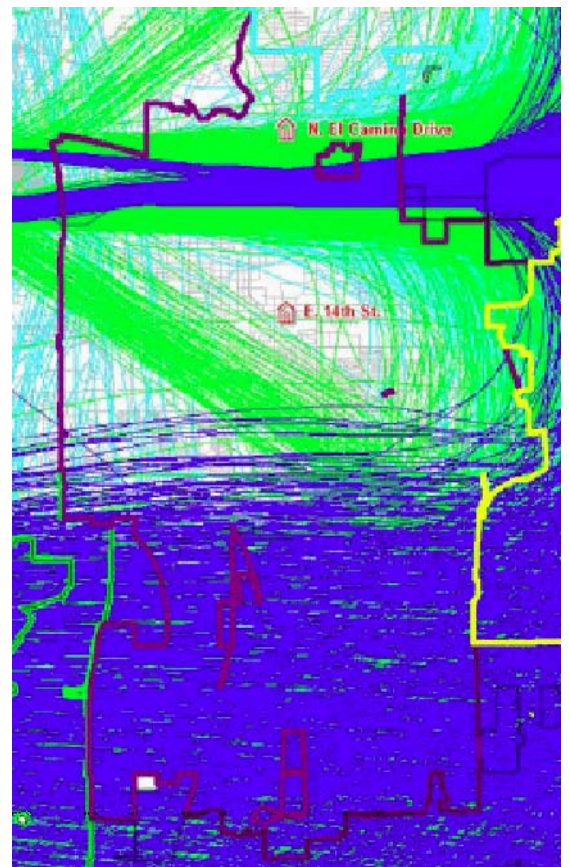
5. Complaints

The City of Tempe started registering aircraft noise complaints from Tempe residents in October 2000 after the opening of the third runway at Phoenix Sky Harbor International Airport. During April 2005, 2 residents filed 3 noise complaints with the City of Tempe.

On the north side of the riverbed early morning departures disturbed sleep were reported, and on the south side of the riverbed report on arriving jet making a short cut over residential areas at Apache Blvd. and Rural Rd during evening.



Green flight tracks = Departures outside the Tempe Corridor
 Blue flight tracks = Departures inside the Tempe Corridor
 Turquoise flight tracks = Arrivals
 Address of resident that filed complaints =



6. TAVCO Recommendations



TAVCO support maintaining a spirit of cooperation that can support a dialogue between the City of Tempe and the City of Phoenix on aviation issues of concern for both cities.

In a letter dated July 2, 2004 TAVCO suggested creating a discussion group, where representatives that include members from both Tempe and Phoenix City Councils can come together and discuss aviation, and the benefits and the challenges it brings to our communities.